# Multi-platform Information Operations: Twitter, Facebook and YouTube against the White Helmets

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## Abstract

Social media platforms are often used as a tool for hosting strategic information operations (e.g., disinformation, influence campaigns, or political propaganda). Understanding how these operations span across multiple social media platforms as opposed to a single platform is a critical step towards the design of strategies that effectively limit their spread. This work provides an analysis of the White Helmets campaign from three platforms: YouTube, Twitter and Facebook. We considered YouTube videos as the means to bridge the gap between other social media platforms. In this study, we show that YouTube content in support of similar narratives is often promoted on different channels. We analyze how YouTube content is advertised in other social media platforms. Finally, we highlight a number of unusual patterns that may hint at coordinated inauthentic behaviors.

## Introduction

Strategic information operations are often not limited to one but rather multiple social media platforms. Examining how these multiple platforms might be used together to diffuse influence campaigns is essential to identify sources of disinformation and propaganda. The White Helmets (WH), a Syrian volunteer organization that engages in war-related medical evacuations, has become the target of a well-acknowledged information campaign (Solon 2017; Hadjimatheou 2021). During their activities, members of the WH documented bombings, chemical attacks, and potential war crimes committed by the Assad regime. Their actions have provoked the Syrian government and its allies to mount orchestrated online disinformation campaigns to undermine the credibility of this organization. A cultivated strategic information operation, as identified by Starbird et al. (Starbird 2019), and online propaganda against this group were executed mainly by information activists, bloggers, journalists, and government-funded media outlets (Starbird, Arif, and Wilson 2019).

As shown by previous studies (Choudhury, Ng, and Iamnitchi 2020; Horawalavithana, Ng, and Iamnitchi 2020; Wilson and Starbird 2020), YouTube videos are at the center of this disinformation campaign aimed at promoting anti-WH content on Twitter. The multifaceted nature of this campaign motivates the need to study how these operations are deployed across multiple platforms as opposed to a single platform.

This study is a new look at the information campaign against the White Helmets by analyzing the activity on three platforms: YouTube, Twitter and Facebook. We study how YouTube videos related to the White Helmets are being pushed on Twitter and Facebook. We show that YouTube content in support of similar narratives is often promoted on different channels. We analyze how YouTube content is advertised in other social media platforms and highlight a number of unusual patterns that may hint at coordinated inauthentic behaviors.

## Related Work

Diffusion of online disinformation has become an area of critical concern for researchers in the space of social cybersecurity. Previous research in disinformation campaigns have focused on single social media channels, more specifically Twitter (Hindman and Vlad 2018; Tucker et al. 2018). However, several studies have shown that the hyperlinks shared across social media platforms play a significant role on the diffusion and amplification of misinformation (Golovchenko et al. 2020; Wilson and Starbird 2020; Horawalavithana, Ng, and Iamnitchi 2020). Golovchenko et al. (Golovchenko et al. 2020) show that 1,052 internet research agency (IRA) accounts shared hyperlinks to political news stories and YouTube videos on Twitter to increase the ideological division in the United States during the 2016 presidential election. These accounts promoted both conservative and liberal content but made a significant attempt to expose liberal users to conservative content. According to previous studies (Wilson and Starbird 2020; Horawalavithana, Ng, and Iamnitchi 2020), YouTube videos are used to promote content against White Helmets on Twitter. Horawalavithana et al. (Horawalavithana, Ng, and Iamnitchi 2020) pointed that the popularity of alternative media URLs on Twitter was due to the accessibility of YouTube video content.

Many researchers emphasized the importance of accounting for the dissemination of information across multiple platforms (Bode and Vraga 2018; Tucker et al. 2018). As reported by DiResta et al. (DiResta et al. 2018), foreign influence efforts create *media mirages* across multiple so-

cial platforms to broadly distribute its content. For example, the authors reported several summary statistics of a cooperative group who built its social presence in Google+, YouTube, Facebook, Twitter, Tumblr, Soundcloud, and Instagram around the topic of *Black Lives Matter*. Facebook and Twitter recently detected coordinated users who were spreading rumors as part of a large network referencing a "significant state-backed information operation" (Baca and Romm 2019). Howard et al. (Howard et al. 2019) investigated the IRA's strategy on sharing content on Facebook, Instagram, Twitter, and YouTube between 2012 and 2018. The authors noticed that organic content shared by IRA accounts are more popular than the content driven by advertisements.

To this end, our study highlights the collaborative nature of online information operations against White Helmets across YouTube, Twitter and Facebook. We reveal different patterns of video content amplification in both single platform and multiple platforms.

## Datasets

We use data from three social media platforms: YouTube, Twitter and Facebook.

**YouTube:** The data was collected using the YouTube API keyword query tool. The list of keywords used in the YouTube data collection was: white helmets, cascos blancos, capacetes brancos, caschi bianchi, casques blancs, elmetti bianchi, weisshelme, weiß helme, syrian civil defence, and lastly White Helmets in Russian and Arabic. The dataset contains 666 videos which span from June 19, 2014 to April 30, 2019 posted on 282 different channels. For each video, we have the following metadata: the date it was published, the channel where it was uploaded and its respective number of subscribers, the total likes, dislikes and view counts at the time of data collection, and lastly the number of comments it received. Additionally, the dataset includes a total of 38,775 top-comments by 21,402 users posted between April 1, 2018 and April 30, 2019.

**Twitter:** This dataset was collected using GNIP API tool. Particularly, the Twitter stream was set to pull records with messages containing any mention of White Helmets in multiple languages (e.g., English, Arabic, Spanish, Russian) during April 1, 2018 to April 30, 2019. Due to our interest on tracking the White Helmets campaign across multiple platforms, we only consider those messages containing a link to videos already present in our YouTube dataset. Overall, the dataset includes 14,776 messages (60% tweets, 38% replies, and 2% quotes) and 24,688 retweets done by a total of 15,752 users.

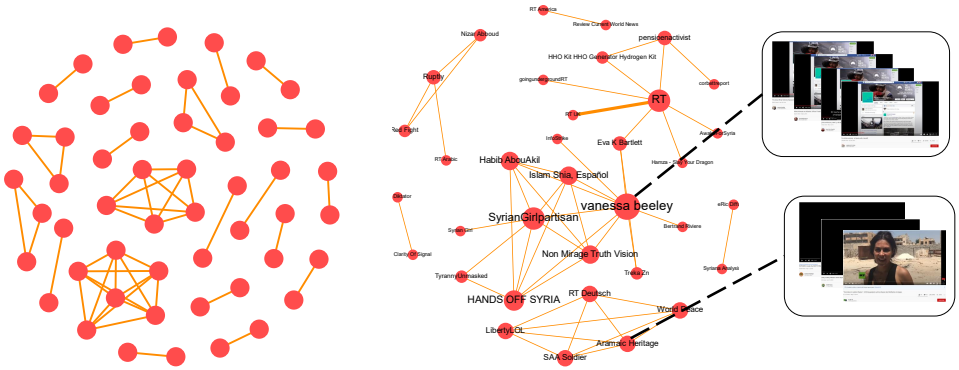
**Facebook:** Facebook data was collected from CrowdTangle (CT) (CrowdTangle 2020), a Facebook-owned tool that tracks interactions on public content from Facebook pages, profiles and groups. Specifically, CT tracks information about public pages with more than 50K likes, public groups with more than 2K members, and all verified profiles. We used a Python library called PyCrowdTangle (Zapata 2020) to retrieve relevant data from Facebook. We collected public Facebook posts with links to YouTube videos already present in our dataset through CT's link endpoint. Similar to Twitter, the time frame for data collection was set between April 1, 2018 and April 30, 2019. The queries to the CT API resulted in a total of 961 posts done by 611 users. Out of 666 videos, only 236 were present in our Facebook dataset. For each post, we have information about its corresponding number of comments, shares, likes, and the exact date when it was posted.

## Who are the Content Creators and What Messages are Amplified?

Detecting semantic similarities across messaging in a network could help identify potential signs of coordination among actors who might be involved in promoting deceptive content (Alizadeh et al. 2020). In YouTube this could be discovered when multiple videos with common content are posted in support of the same message and in different channels. Previous work (Choudhury, Ng, and Iamnitchi 2020) used hashing-based algorithms to identify pairs of near-duplicated comments in YouTube and to subsequently detect potential inorganic behavior. In this study, we resort to YouTube titles and captions to identify videos in support of the same message. We used a corpus-linguistic approach to detect YouTube videos with common content. We applied a hash-structure via locality sensitive hashing algorithm (LSH) (Slaney and Casey 2008) to identify near identical texts. Specifically, LSH preserves local relationships of the data and ensures hash collisions for similar items. We used minHash as the similarity function, which aims to estimate Jaccard's similarity of pairs of texts in a efficient and scalable way. The collected YouTube video titles/captions were preprocessed via removing punctuation, stop words, URLs, white spaces and emojis; applying tokenization and lastly text normalization (lowercasing all texts). Overall, we found 53 videos with near-identical content uploaded to 35 different channels.

Similar to previous studies on a different dataset related to the White Helmets (Starbird 2019), we found a considerable presence of Russian state-sponsored media, Western journalists, and information activists at the center of this campaign. Figure 1a presents the network of videos connected through near-identical content and Figure 1b shows the network as grouped by their corresponding YouTube channels. Additionally, we present sample snapshots of near-identical videos from the two largest clusters in the network. The first cluster is centered around a video uploaded to the YouTube channel of journalist Vanessa Beeley. The video aims at discrediting the White Helmets by presenting a series of video footage alleging WH's affiliations with terrorists organizations and Western governments. Moreover, the video was quickly uploaded in various other channels over the next couple of days, including some that mainly target non-English speaking audiences (e.g., Islam Shia, Español).

The second tightly connected cluster consists of 5 channels who uploaded video footage from a documentary by former actress and anti-WH activist, Carla Ortiz. The video shows Carla Ortiz reporting from the city of Aleppo, which is supposedly the WH's headquarters, and claiming the headquarters to be linked with Syrian terrorists groups. The video circulated first on relatively small channels (e.g., Ara-




(a) Video Network (b) Channel Network

Figure 1: The network of videos (a) and channels (b) who have shared near-identical content as identified by LSH. The edge weight refers to the number of pairs of videos uploaded to each channel that contained identical content. All edges have a weight of 1 with the exception of RT and RT UK, where the edge weight is 4. The size of the channel nodes is proportional to their degrees.

maic Heritage, World Peace) until a month later, when it appeared on the German branch of Russian Today (RT). The main RT channel was also found to be a central content provider for many small channels (e.g., pensioenactivist, AwakeForSyria) and owned secondary channels, who would upload RT's videos shortly after being published. The involvement of Russian sponsored sites in the campaign against the White Helmets has been well-documented in literature from the perspective of a single social media platform (Horawalavithana, Ng, and Iamnitchi 2020; Pacheco, Flammini, and Menczer 2020).

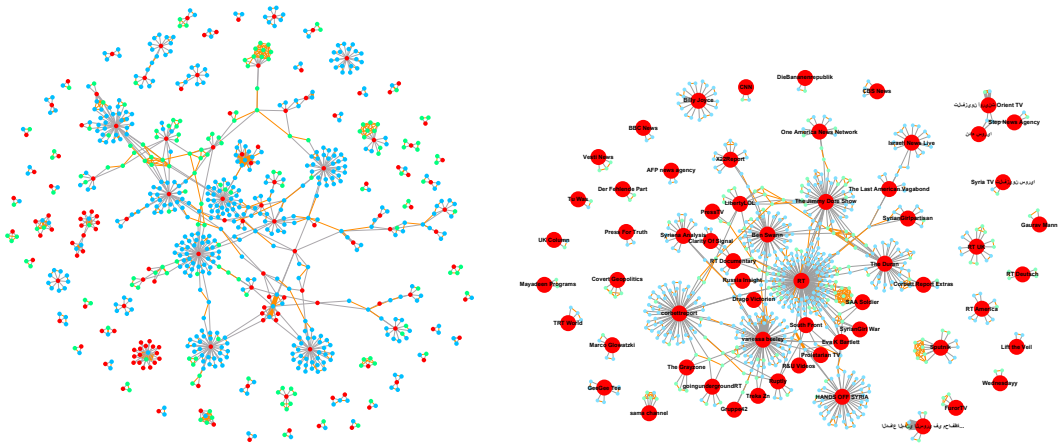
Despite the fact that data collection and processing did not use sentiment toward the WH as a selection feature, all channels in the network constructed based on overlapping content posted mainly anti-WH content.

## How are the YouTube Videos Publicized on Twitter and Facebook?

In this section, we investigate how content originating from YouTube is introduced to other social media platforms, specifically Twitter and Facebook. Particularly, we are interested in identifying suspicious behavior related to the promotion of YouTube videos through potentially coordinated groups. However, in this study, we do not attempt to characterize whether such questionable behavior results from coordinated effort or simply a consequence of unwitting crowds. Rather, we seek to highlight unusual patterns that could raise suspicions of inauthenticity.

We adopt the methodology proposed in (Giglietto et al. 2020) to identify coordinated link sharing behavior (CLSB), and extend their definition to multiple platforms. CLSB is defined as "two or more entities that share the same URLs in an unusually short period of time." This short period of time was computed empirically based on an analysis of inter-arrival times between shares of the same video across the entire dataset. Particularly, we first rank all Twitter and Facebook shares (i.e., tweets and posts) of the same video based on their published date. For each video, we compute the inter-arrival time in seconds between its first share on any platform (either Twitter or Facebook) and all successive shares. Next, we identify the top 10% fastest shared videos based on the shortest time difference between their first and second shares. Lastly, the time threshold is obtained by calculating the median time in seconds that it takes for these top 10% videos to reach 50% of their total number of shares. We stress that in this context, a reshare on Twitter means another tweet (thus, not a retweet) of the video URL; a reshare on Facebook means another original post on Facebook (and not the reshare action). In our dataset, the time threshold was found to be 52 seconds. Finally, we construct the network of potentially coordinated accounts that promote YouTube videos by considering only those pairs of users who posted the same video 52 seconds apart.

Figure 2a shows the network of coordinated users connected to the videos they share. The red nodes represent YouTube videos, the blue nodes represent Twitter users and the green nodes represent Facebook users. There are two types of edges: (1) the gray edges connect a Twitter/Facebook user to a video, where the edge weight represents the number of times this user has promoted this video, and (2) the orange edges connect two social media users if they posted the same video 52 seconds apart. The weight of these orange edges refers to the number of times these two users have engaged in CLSB. The network consists of 776 nodes (144 YouTube videos, 471 Twitter users, and 161 Facebook users). Out of these 144 videos, we found 70 videos with potential evidence of multi-platform coordination (i.e., multiple users from both Twitter and Facebook promoting the same video), and 74 videos with potential single-platform coordination (only users from either Twitter or Facebook promoting the same video). The network consists of 61 multi-platform connections (i.e., a Twitter and a Facebook user engaged in CLSB) and 389 single platform connections. Figure 2b presents the network of coordinated users to channels. In this network, we grouped videos based on the channels that uploaded them. We observe that the



(a) (b)

Figure 2: (a) The network constructed based on coordinated link sharing behavior (CLSB). The red nodes represent YouTube videos, the blue nodes represent Twitter users and the green nodes represent Facebook users. The gray edges connect a social media user to a video. The orange edges connect two social media users if they engaged in CLSB. (b) Network of coordinated users to channels. Node coloring and connections between social media users remain the same as in (a), but videos are grouped by their respective channels.

largest connected component consists of channels that actively participated in the campaign against the White Helmets (e.g., RT, Vanessa Beeley, Eva Bartlett, Jimmy Dore, Ben Swann, etc.) and that were also engaged in content coordination. On the other hand, mainstream channels such as CNN, BBC or CBS form disconnected components located on the periphery and with less evidence of coordinated behavior.

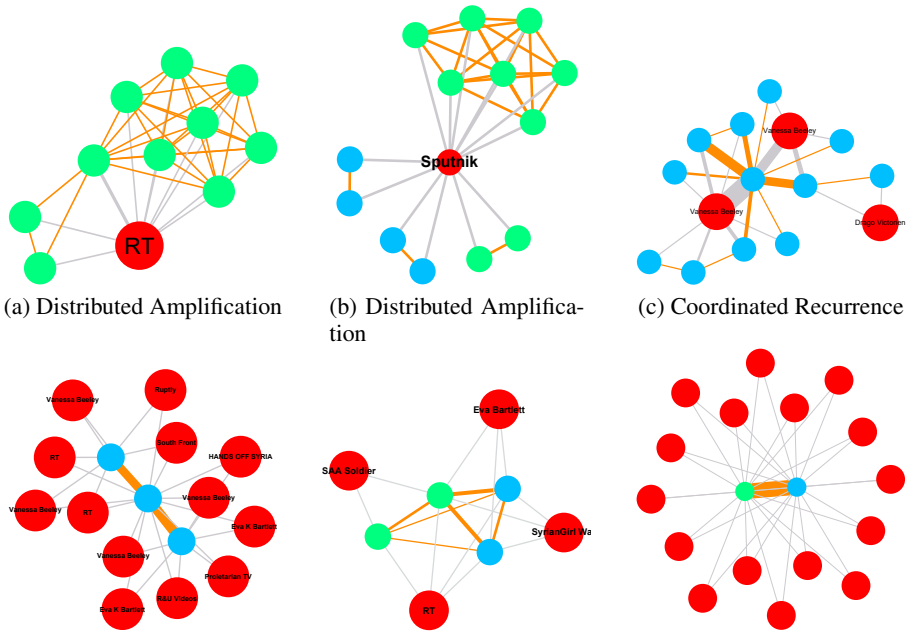
A deeper investigation on these networks revealed some unusual structural patterns around groups of social media users, who engaged in suspicious video sharing. These were the following:

**Distributed Amplification**: This strategy focuses on the wide and rapid dissemination of content by a particular group of users. Figure 3a presents a network of multiple Facebook users who posted the same video uploaded by RT. The video titled *Lights, Camera, Action!* accuses the WH of staging chemical attacks in the city of Idlib. This video was uploaded on September 16, 2018. One day after it was published, a group of eight users posted independently the link on Facebook. The postings did not contain any text other than the video URL itself and all occurred within one minute. One hour after the first set of posts, a user from these eight and two new users posted the link once again.

We also identified this strategy in multi-platform settings. Figure 3b shows a group of users who publicized a video from the Russian state-sponsored channel, *Sputnik*. The video uploaded on April 2018 and titled *Syria: Boy in White Helmets Reveals Truth* features Hassan Diab and his father in an exclusive interview for Russian media, where the boy testifies there was no evidence of chemical attacks at a hospital in the city of Douma. One day after the video was published, two users tweeted the video at the exact time. Ten hours later another pair of Twitter users engaged in the same behavior. On the other hand, the group of Facebook users coordinately posted the video six months after the video's publication on YouTube. These behaviors suggest a potential attempt to widely spread a similar narrative across various social media platforms.

**Coordinated Video Recurrence**: Figure 3c shows multiple coordinated attempts among Twitter users in promoting videos uploaded to *Vanessa Beeley* channel, and one coordinated attempt to promote a video from *Drago Victorien*, a small pro-Russian YouTube channel. Both of Beeley's videos present a compilation of testimonies supposedly taken from Syrian civilians claiming the WH to be linked with Al Nusra and Al Qaeda. Drago's video presents an anti-WH briefing by Maria Zakharova, Russia's director of information and press. These videos were uploaded to YouTube during 2016 and 2017, and were posted to Twitter by this group of users in July 2018. At the center of the amplification, there is one Twitter user who repeatedly posted Beeley's videos at different times. All his tweets consisted of the same message together with the URL of the video. This user coordinated repeatedly with other users by simultaneously sharing the same video. These postings on Twitter occurred during an event involving the evacuation of WH members to Israel, in which a few Western governments agreed to resettle a number of evacuees. We believe this suspicious pattern might surface not only from coordinated efforts, but also via simultaneous reactions to external events. That is, users' apparent coordination could be simply a consequence of either an exogenous or internal process triggering concurrent reactions.

**Agenda Broadcasting**: Figure 3d shows a network of three users devoted to various videos from multiple YouTube channels. The node at the center shared all videos, whereas the other two coordinately shared with this same user on 6 and 7 videos, respectively. On average, the inter-arrival time between these users' postings and the time when the videos




(a) Distributed Amplification (b) Distributed Amplification (c) Coordinated Recurrence

(d) Agenda Broadcasting (e) Sockpuppetry (f) Self-promotion

Figure 3: Examples of sub-networks with coordinated behavior. Red nodes with labels represent channels, while red nodes without labels represent videos. Facebook users are represented as green nodes and Twitter users as blue nodes.

were published was approximately 10 days, with a median of 12 hours. Similar to previous observations, the messages from these users only consisted of the link to the YouTube videos. We noticed that all videos that appeared in this network shared the same agenda, that of discrediting the WH organization. We believe this behavior does not belong to coincidental activities, but rather might be part of an orchestrated coordinated attempt to widely broadcast a common agenda inside other social media platforms.

**Sockpuppetry** Figure 3e presents four users who promote the same videos simultaneously (within 52 seconds). All videos, from different channels, promote the same agenda, that of framing the WH organization as a terrorist group funded by the West. This behavior is consistent with sockpuppets accounts controlled by the same agent across multiple platforms.

Lastly, we found several instances where a Facebook and a Twitter account shared multiple videos from the same channel within short time. Figure 3f shows one such instance of 16 videos promoted soon after their publication on YouTube. We believe that these two accounts belong to the YouTube account of the channel they promote, which is a common practice for advertising YouTube content on other social media platforms.

## Summary and Discussions

This study investigates how YouTube content on the White Helmets was disseminated and amplified on Facebook and Twitter. We conducted this investigation by first connecting videos and channels based on content similarity revealed using a corpus-linguistic approach on video titles and captions. We discovered the promotion of near identical content in support of the same narrative on multiple channels of Russian sponsored media, Western journalists, and information activists. Second, we investigated how these YouTube videos were introduced to Twitter and Facebook. Particularly, we highlight patterns of distributed content amplification in both single platform and multi-platforms. We show instances of coordinated video recurrence, agenda broadcasting, and sockpuppetry. We stressed that not all of these identified patterns might be the effect of coordinated efforts, but rather could be tied to organic behaviors (e.g., unwitting crowds responding synchronously to exogenous events). Richer data are needed to confirm that suspicious content promotion patterns are the result of coordinated efforts. This paper presents some techniques that proved successful in isolating unusual behavior.

Our analysis of multi-platform information dissemination related to the White Helmets highlights a number of data requirements for rigorous identification of coordinated actions. First, publicly available multi-platform data is very limited: a larger corpus of such datasets would help distinguish normal from coordinated behavior. For example, content publishers on YouTube may naturally advertise their newly posted videos on Facebook and Twitter; users excited about some new video may post it on multiple platforms within a short interval. Correlating these activities with viewing timestamps or video posting timestamps would help distinguish organic from inorganic behaviors. Second, data from some platforms is scarce, especially after content or accounts are removed from the platform. While Twitter is more transparent and publishes accounts and activity in-

volved in, for example, state-sponsored information operations, Facebook and YouTube are notoriously opaque. For example, the Corbett Report channel present in our dataset and involved in the WH campaign does not exist on YouTube anymore, which means that future attempts to collect more data related to this campaign would miss critical information. Similarly, Facebook user accounts engaged in the campaign against the WH might have been removed due to Facebook policies, and thus they are not represented in our analysis. Third, the tension between accountability and privacy might deserve a new debate in the context of information operation investigations: our Twitter data is anonymized, thus we could not reliably connect user accounts across platforms. We believe the social media platforms and the society at large would benefit from better transparency in sharing collections of accounts and the related activities that violate their norms. The research community could help with some of the challenges that currently overwhelm the platforms, especially in contexts of global impact such as disinformation and state-sponsored information operations.

URLs have been heavily used to connect activity across platforms. We and others have used content similarity to connect activity from different content creators. What is missing is ways to connect the promotion of the same agenda via different content. Our study shows evidence of high levels of coordination between channels that promote messages aimed to discredit the White Helmets. We believe that (dis)information campaigns can be better evaluated when content creators are connected by the agendas they push via various content forms, if video, microblogging or Reddit-like discussion threads.

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